

Role of hydrogen environment induced hydrogen embrittlement of Ti-8Al-1Mo-2V alloy

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Abstract

Structural analysis by mean of metallographic, SEM fractographic and TEM replica technique including acoustics-emission studies have been carried out on Ti-8Al-1Mo-2V alloy specimen tested at room temperature in gaseous hydrogen environment. The result provided evidences of the presence of face centred cubic titanium hydride at the fracture surfaces, with discontinuous nature of crack propagation. The present work confirmed that an essentially continuous path of β phase is necessary for the occurrence of slow crack growth in gaseous hydrogen. Metallographic and fractographic observation leave little doubt that cracks propagates along the α - β interface rather than through stable α phase.

Keywords: Accoustic emission; Crack propagation; Embrittlement; Fractographic; Precracked; Widmanstätten structure

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